

```

import tensorflow as tf
import matplotlib.pyplot as plt

(x_train, y_train), (x_test, y_test) =
tf.keras.datasets.fashion_mnist.load_data()
x_train, x_test = x_train.reshape(-1, 28*28) / 255.0, x_test.reshape(-
1, 28*28) / 255.0

model = tf.keras.Sequential([
    tf.keras.layers.Dense(128, activation="relu", input_shape=(784,)),
    tf.keras.layers.Dense(10, activation="softmax")
])

model.compile(optimizer="adam",
loss="sparse_categorical_crossentropy", metrics=["accuracy"])

history = model.fit(x_train, y_train, epochs=5,
validation_data=(x_test, y_test), verbose=0)

plt.figure(figsize=(12, 4))

plt.subplot(1, 2, 1)
plt.plot(history.history["loss"], label="Train Loss")
plt.plot(history.history["val_loss"], label="Val Loss")
plt.xlabel("Epoka")
plt.ylabel("Strata")
plt.title("Zmiany wartości funkcji kosztu")
plt.legend()
plt.grid()

plt.subplot(1, 2, 2)
plt.plot(history.history["accuracy"], label="Train Accuracy")
plt.plot(history.history["val_accuracy"], label="Val Accuracy")
plt.xlabel("Epoka")
plt.ylabel("Dokładność")
plt.title("Zmiany dokładności modelu")
plt.legend()
plt.grid()

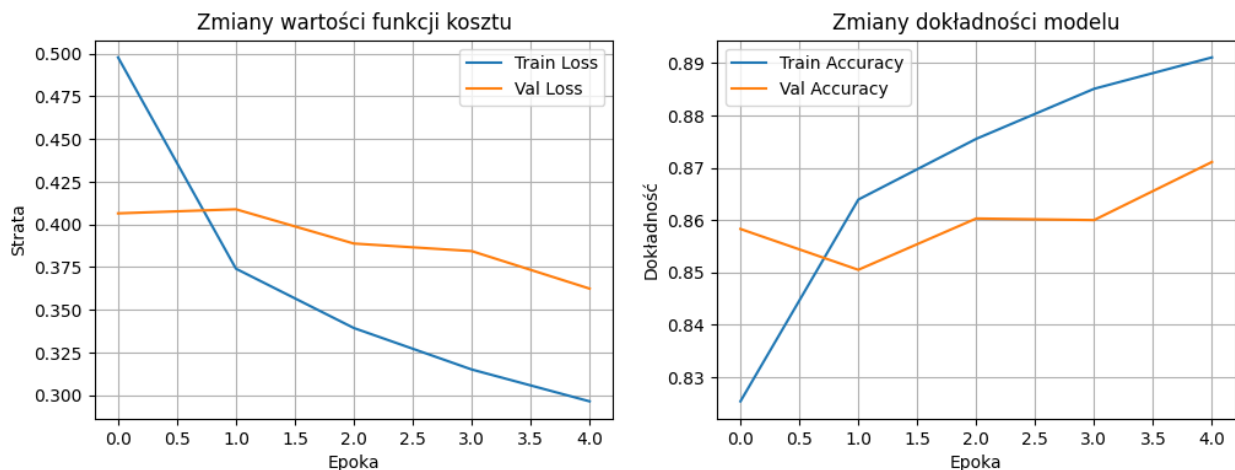
plt.show()

Downloading data from https://storage.googleapis.com/tensorflow/tf-
keras-datasets/train-labels-idx1-ubyte.gz
29515/29515 _____ 0s 0us/step
Downloading data from https://storage.googleapis.com/tensorflow/tf-
keras-datasets/train-images-idx3-ubyte.gz
26421880/26421880 _____ 2s 0us/step
Downloading data from https://storage.googleapis.com/tensorflow/tf-
keras-datasets/t10k-labels-idx1-ubyte.gz
5148/5148 _____ 0s 0s/step

```

Downloading data from <https://storage.googleapis.com/tensorflow/tf-keras-datasets/t10k-images-idx3-ubyte.gz>
4422102/4422102 0s 0us/step

c:\Users\szymo\AppData\Local\Programs\Python\Python312\Lib\site-packages\keras\src\layers\core\dense.py:93: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
super().__init__(activity_regularizer=activity_regularizer,
**kwargs)



```
import tensorflow as tf
import matplotlib.pyplot as plt

(x_train, y_train), (x_test, y_test) =
tf.keras.datasets.fashion_mnist.load_data()
x_train, x_test = x_train.reshape(-1, 28*28) / 255.0, x_test.reshape(-
1, 28*28) / 255.0

model = tf.keras.Sequential([
    tf.keras.layers.Dense(128, activation="relu", input_shape=(784,)),
    tf.keras.layers.Dense(10, activation="softmax")
])

model.compile(optimizer="adam",
loss="sparse_categorical_crossentropy", metrics=["accuracy"])

history = model.fit(x_train, y_train, epochs=5,
validation_data=(x_test, y_test), verbose=0)

plt.figure(figsize=(12, 4))

plt.subplot(1, 2, 1)
plt.plot(history.history["loss"], label="Train Loss")
```

```

plt.plot(history.history["val_loss"], label="Val Loss")
plt.xlabel("Epoka")
plt.ylabel("Strata")
plt.title("Zmiany wartości funkcji kosztu")
plt.legend()
plt.grid()

plt.subplot(1, 2, 2)
plt.plot(history.history["accuracy"], label="Train Accuracy")
plt.plot(history.history["val_accuracy"], label="Val Accuracy")
plt.xlabel("Epoka")
plt.ylabel("Dokładność")
plt.title("Zmiany dokładności modelu")
plt.legend()
plt.grid()

plt.show()

```

